

A Nutritional Evaluation of Common Barley Varieties Grown for Silage by Beef and Dairy Producers in Western Canada

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This study evaluated the nutritional and neutral detergent fiber digestibility characteristics of common barley varieties grown for silage by beef and dairy operations in Western Canada. Of 135 silage samples collected over two years (2012 and 2013), 80 samples harvested at the mid dough stage of maturity representing seven varieties (Conlon, CDC Copeland, CDC Cowboy, Falcon, Legacy, AC Metcalfe and Xena) were selected for analysis. Average pH and dry matter (DM) were 4.05 ± 0.17 and 36.8 ± 4.13 , respectively. AC Metcalfe had higher ($P < 0.05$) CP content relative to CDC Copeland and Xena with intermediate values for the other varieties. Acid detergent fiber (ADF) content was higher ($P < 0.05$) for CDC Cowboy and AC Metcalfe relative to Conlon. Similarly, CDC Cowboy had a higher ($P < 0.05$) NDF content relative to Conlon, Falcon and Legacy. AC Metcalfe had a higher ($P < 0.05$) lignin content than CDC Copeland. Starch content of Legacy and Conlon was higher ($P < 0.05$) than that of CDC Cowboy with intermediate values for the other varieties. Neutral detergent fiber digestibility (NDFD) after 6 and 30 h of incubation in a Daisy^{II} differed with Legacy and CDC Cowboy having the highest ($P < 0.05$) NDFD at the respective time points. Indigestible NDF (INDF; as % NDF) measured after 288 h of *in situ* rumen incubation was greater ($P < 0.05$) for AC Metcalfe relative to CDC Cowboy and Falcon. Silage fermentation parameters including VFA, lactate and ammonia concentrations did not differ among the varieties. These results indicate that barley varieties grown for silage in Western Canada vary with respect to chemical composition, NDFD and INDF content.

Implications: Potential benefits for cattle producers in selecting barley varieties with higher 30 h NDFD include improvements in DM and digestible energy intake, rumen health and production.